



TOWN OF LEVERETT
Massachusetts 01054

Leverett Municipal Light Plant

DATE: 2 March 2014

**FROM: Peter d'Errico, Member, SelectBoard, Municipal Light Board
Town of Leverett, MA**

TO: Federal Communications Commission

**SUBJECT: Expression of Interest (EOI) – Rural Trials
Docket No. 10-90**

The Town of Leverett Massachusetts Municipal Light Plant hereby submits its Expression of Interest to participate in the Rural Broadband Trials program announced by the Federal Communications Commission (FCC) on January 30, 2014.

Overview:

The Leverett Municipal Light Plant (MLP) was created by the Town of Leverett to undertake development of a 'last mile' Fiber-to-the-Home (FTTH) network. The network is currently under construction, with a planned completion date of December 2014. The project is funded by a general obligation municipal tax bond in the amount of \$3.6M, as explained below.

The MLP proposes, through this EOI, to construct a cell-tower infrastructure to complement the FTTH network with mobile wireless service throughout the Town.

The combination of Town-funded FTTH and an FCC-funded mobile wireless system would make Leverett an excellent location for an FCC rural trial. It would provide a framework to gather data and test the proposition that universal telecommunications service can be maintained (and enhanced) when end-users transition from legacy landline networks to broadband telecommunications.

The impetus for Leverett's FTTH project includes need for both Internet access and telephone service. The Town currently lacks broadband Internet and reliable telephone service. This is a serious impediment to public good and public safety, affecting police, fire, and highway departments, the school, and residents generally.

(1) Internet: Leverett has no cable provider and only a small neighborhood served by DSL. The majority of residents rely on satellite, with fixed wireless available in some areas. Old, inadequate copper distribution lines compromise DSL service. High latency compromises satellite service. High cost for low bandwidth compromises DSL, satellite, and fixed wireless.

(2) Telephone: The copper-based landline system is so prone to disruption that the town was included in a state investigation of voice service quality by the Massachusetts Department of Telecommunications and Cable. That investigation was settled with an agreement requiring improvements to the landline infrastructure; but problems persist, especially in wet weather. Leverett has extremely limited wireless telephone service.

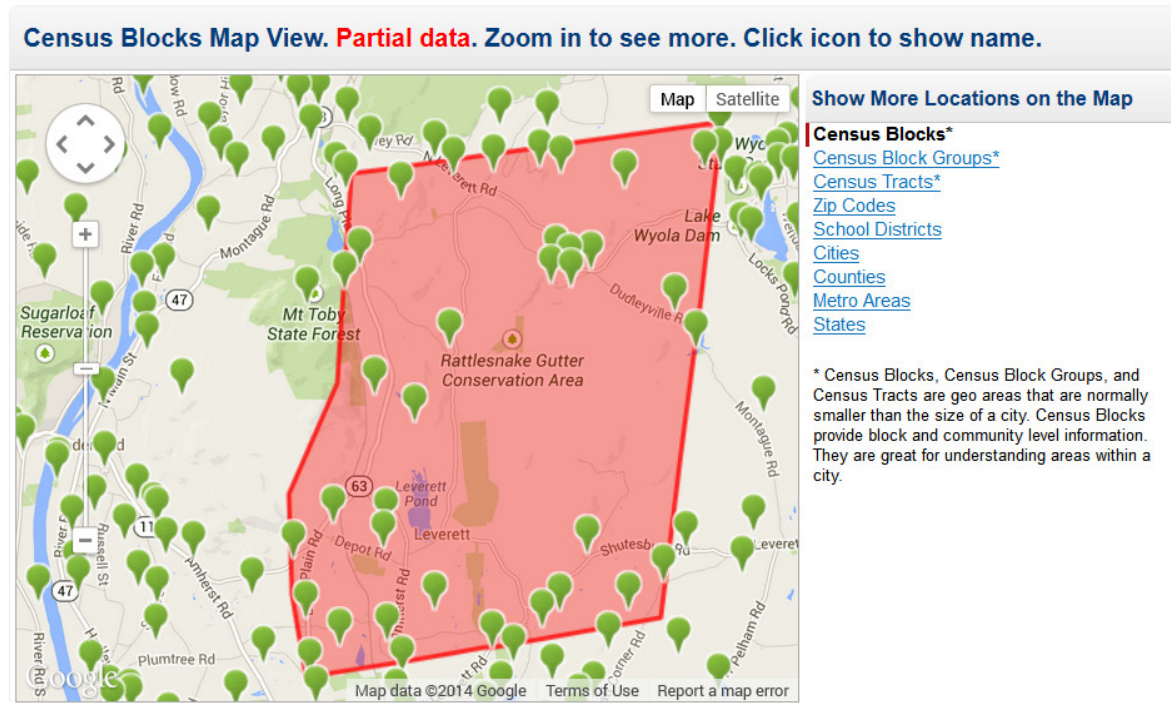
The Leverett MLP has commitments from two eligible telecommunications carriers (ETCs) to partner with the Town if the FCC provides funding to support a rural trial in Leverett.

Geographic Territory:

Leverett is a rural community in the Pioneer Valley of Western Massachusetts, with a population of nearly 2000 in about 800 households in 22.7 square miles: approximately 88 persons per square mile (See: <http://www.leverett.ma.us/content/general-leverett-information>). The proposed FCC-funded project will serve all Town households, businesses, and anchor institutions (listed below).

Following is a map showing Leverett census blocks:

Block Group 040600-1 Map, Border, and Nearby Locations



Block Group 040600-1 Blocks

MA0110406001000	Leverett	MA0110406001001	Leverett	MA0110406001002	Leverett
MA0110406001003	Leverett	MA0110406001004	Leverett	MA0110406001005	Leverett
MA0110406001006	Leverett	MA0110406001007	Leverett	MA0110406001008	Leverett
MA0110406001009	Leverett	MA0110406001010	Leverett	MA0110406001011	Leverett

Anchor Institutions:

Elementary School

Public Library

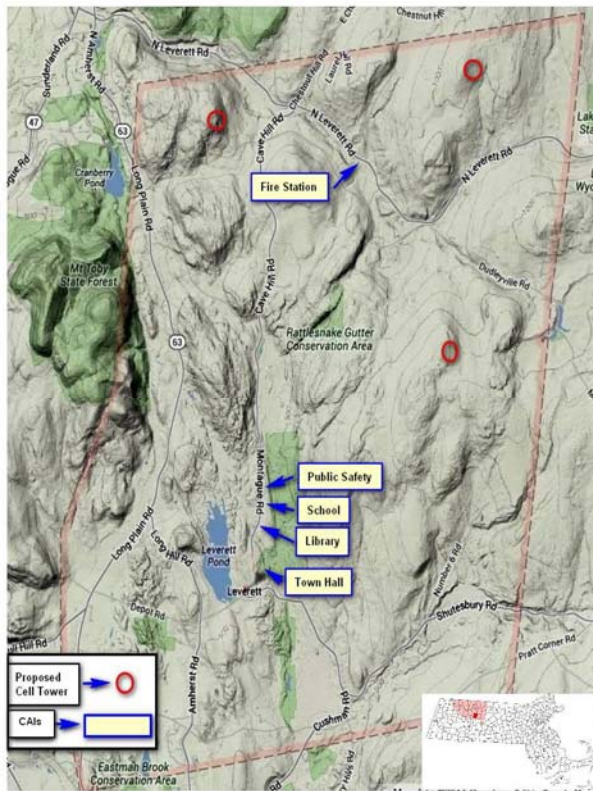
Public Safety Complex (Police, Fire, Highway)

Religious Organizations (Congregational Church, Moore's Corner Baptist Church, North Leverett Baptist Church, The Quaker Friends Meetinghouse, Japanese Buddhist Temple, Cambodian Buddhist Temple, and the Guru and Ashram Community)

Village Coop General Store

Artists and Crafts Association

Following is a map showing municipal anchor institutions and prospective cell tower locations:



Project Technology, Operation, and Costs:

The Leverett FTTH network will provide 1G symmetrical Active-Ethernet access and full-featured IP-based telephone service. Connection to the Internet will be through the Massachusetts Broadband Institute (MBI) 'middle mile' (funded in part by the American Recovery and Reinvestment Act).

As indicated above, the Town authorized a municipal tax bond to pay capital costs of the FTTH network build. The MLP will provide Internet services at the cost of bandwidth, plus operating expenses of the MLP, such costs to be borne by subscribers. The MLP will select a single Internet Service Provider (ISP) to serve the network and will contract with third parties to operate and maintain the network. Our negotiations to date show a subscriber's monthly cost ~ \$40/subscriber, plus an additional ~ \$40/subscriber to cover MLP network operations, maintenance, depreciation, etc.

This Expression of Interest (EOI) proposes FCC funding for construction of a cell-tower infrastructure to provide mobile wireless service throughout the Town, as a critical complement to the FTTH network.

Local Support:

The FTTH project is funded through a 20-year general obligation municipal tax bond in the amount of \$3.6M. Overwhelming majorities of voters approved the bond issue in two secret ballots (90% at Town Meeting to authorize the bond and 83.5% in a separate 'debt-exclusion' vote).

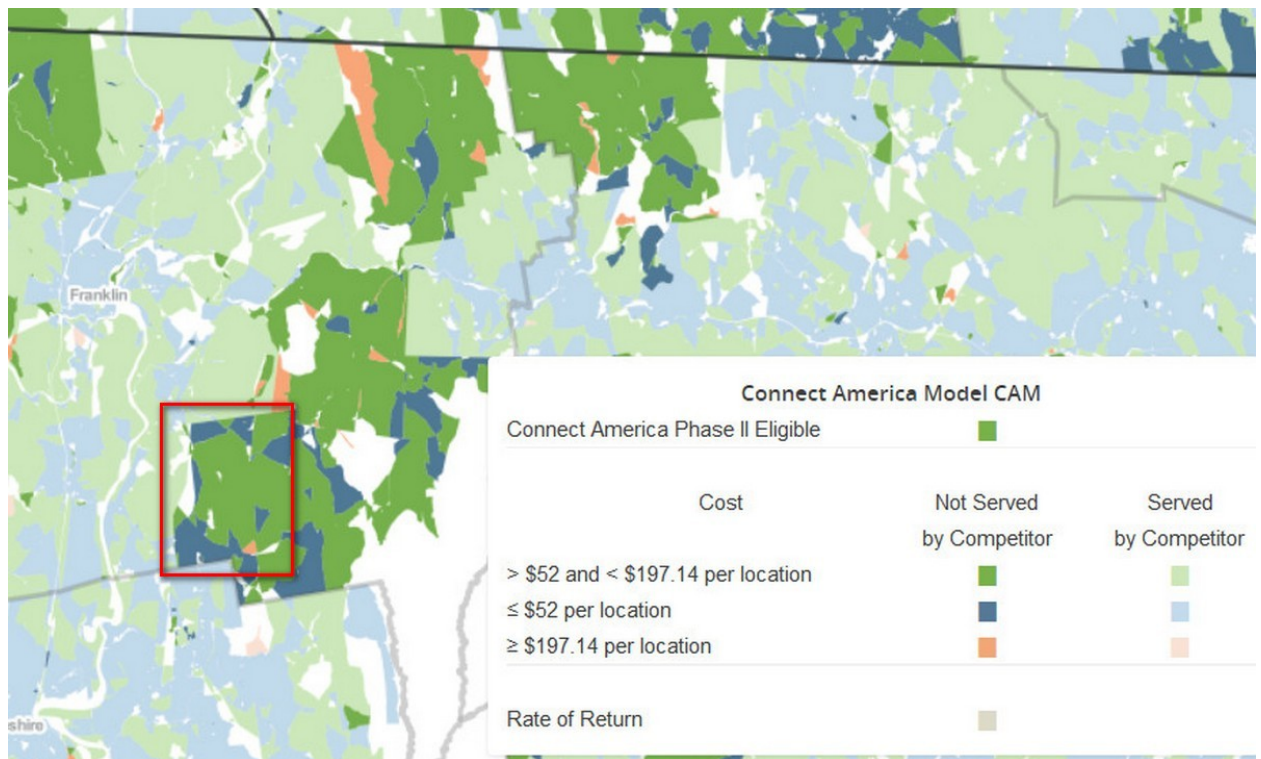
The Town has awarded a contract for construction of the network. The MLP is funding make-ready and pole license applications with local utility and telephone companies. The MLP is contracting for construction of network equipment shelters in two locations. Oversight of the project is by a Project Manager, in conjunction with a volunteer broadband technical committee, reporting to the MLP and SelectBoard (local government executive board), assisted by the Town Administrator, Facilities Manager, and other Town employees.

MBI awarded a \$40K grant to the Town to fund the initial network design, and has provided ongoing consulting assistance. The Town will contract for 'middle mile' transport via the MBI network and its operator, Axia NGNetworks (Axia).

Existing Providers:

Verizon provides limited DSL service in two neighborhoods. Residents in a few other locations are able to use fixed wireless from Verizon or another provider. Satellite service is available in almost all locations, from Wildblue and Hughes.

Following is a portion of a Connect America map showing Leverett as a CAF phase II eligible location; it should be noted that actual, on-the-ground availability of DSL is currently less than indicated, due to deteriorated copper plant:



Project Timeline:

The FTTH project is well underway, with planned completion at the end of 2014. The build contractor has completed final design of fiber distribution lines and premise drops and has begun new pole installations. Make-ready applications are complete and work will begin as weather permits. The MLP is in final negotiations with a Network Operator. The MLP plans to select an ISP by April 2014, and begin pre-subscriber education and sign-up. The MLP has already contracted for maintenance of network physical plant.

The mobile wireless infrastructure proposed herein for FCC funding would be initiated immediately upon receipt of funding. The Town has preliminary design locations for cell towers to provide service throughout town (see municipal anchor institutions map above). The FTTH network design includes sufficient capacity in the fiber distribution and equipment to support cell tower operation. Construction of the mobile wireless infrastructure would be integrated into the existing FTTH project management structure.

Scalability:

In anticipation that the availability of fast, reliable Internet and telephone service will attract new businesses and promote economic expansion by existing residents, the FTTH design includes future proofing and potential for scalability. The basic network architecture and equipment are designed to easily handle an expansion of bandwidth from symmetrical 1G to 10G and more.

High-speed symmetrical bandwidth will support advanced applications such as video relay service (VRS) and next-generation 911, as well as a telemedicine system in partnership with regional hospitals.

'Smart grid' applications are under discussion with the local electric utility—Western Massachusetts Electric Company (WMECO)—to deploy 'smart' switches on transmission lines. The town is eager to partner with the utility to advance grid security, especially in light of severe weather that has recently occurred in the region.

The FTTH network design includes provisions to support scalability for wireless mobile telephone service throughout town, as is proposed by this EOI.

Local Investment:

Leverett taxpayers have invested \$3.6M to finance the FTTH portion of the overall telecommunications network envisioned in this EOI. This investment covers all capital costs associated with the FTTH build. In addition, Town employees and volunteers are supplying human resources to support project management.

The Commonwealth of Massachusetts has invested ~ \$40M in the MBI 'middle mile,' assisted by an additional ~ \$50M in American Recovery and Reinvestment Act (ARRA) funds.

One-Time FCC Investment Needed:

Capital costs for deployment of a mobile wireless infrastructure to serve Leverett, as an integrated complement to the Town-funded FTTH network, would be ~ \$4.5M.

Total Project Cost:

The total cost of an integrated FTTH and mobile wireless system for Leverett would be ~ \$8.1M.

Media Citations to the Leverett Broadband Project:

"Think government can't provide cheap, efficient, high-speed connectivity? Two very different locales show it can":

<http://www.infoworld.com/d/the-industry-standard/how-two-cities-brought-fiber-the-home-when-the-carriers-couldnt-233793>

"The town of 1,851 voted to raise their taxes to pay for a fiber-to-the-home network. The result was a resounding 462 for and 90 against":

<http://communitybroadbandnetworks.org/taxonomy/term/30/all/content/comment/reply/802?page=10>

"Some communities are taking more direct control over their fates. In Leverett, Mass., planning that began in 2011 is expected to result in the deployment next year of a fiber-to-the-home network 'that will be operated by a publicly controlled Municipal Light Plant entity,' a case study by Harvard researchers said":

<http://www.statetechmagazine.com/article/2013/12/which-cities-will-get-fiber-networks-2014>

"We first reported on Leverett in the spring of 2012. Leverett, a small town of 2,000, also attracted Susan Crawford's attention":

<http://www.muninetworks.org/tags-323>

"Leverett's locally run FTTH network will go live later this year, made possible by the foresight of the state of Massachusetts, which built 'a middle mile' fiber network that previously isolated communities can tie into":

<http://www.infoworld.com/d/the-industry-standard/how-two-cities-brought-fiber-the-home-when-the-carriers-couldnt-233793>

"A detailed account of the development of LeverettNet, Leverett, Massachusetts' municipal fiber optic network":

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2366044

"The small Massachusetts town of Leverett... conducted the most open and transparent bond approval process that I've seen. What was being decided was a \$3.6 million project to build a broadband network....":

<http://blogs.reuters.com/muniland/tag/massachusetts/>